

ABSTRACT OF THE DISCLOSURE

A perfluoropolyether, a composition comprising the perfluoropolyether, a process for producing the perfluoropolyether, and a process for improving the thermostability of grease or lubricant are provided. The perfluoropolyether comprises perfluoroalkyl radical end groups. The perfluoroalkyl radical has at least 3 carbon atoms per radical and is substantially free of perfluoromethyl and perfluoroethyl end group. The process for producing the perfluoropolyether can 5 comprise (1) contacting a perfluoro acid halide, a C₂ to C₄-substituted ethyl epoxide, a C₃⁺ fluoroketone, or combinations of two or more thereof with a metal halide to produce an alkoxide; (2) contacting the alkoxide with either hexafluoropropylene or tetrafluoroolexentane to produce a second acid halide; (3) esterifying the second acid 10 halide to an ester; (4) reducing the ester to its corresponding alcohol; (5) converting the corresponding alcohol with a base to a salt form; (6) contacting the salt form 15 with a C₃ or higher olefin to produce a prepolyether; and (7) fluorinating the prepolyether. The process for improving the thermostability of a grease or lubricant comprises combining the grease or lubricant with the composition disclosed above.